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JOHN ARTHUR JOHNSON, OF LEAVENWORTH, KANSAS.

WRENCH.

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To all whom it may concern:

Be it known that I, JOHN ARTHUR JOHNSON, a citizen of the United States, and a resident of Leavenworth, in the county of Leavenworth and State of Kansas, have invented certain new and useful Improvements in Wrenches, of which the following is a specification.

My invention relates to improvements in wrenches and has for its object to provide an improved wrench which is of simple and durable construction, reliable in operation and easy and inexpensive to manufacture, which may be easily and readily adjusted and which is adapted to exert a powerful gripping action upon the work.

Another object is to provide an improved wrench of this character which in assembly presents a substantially unitary structure and which may be easily dissembled for purposes of replacement or repair.

Other objects and advantages reside in certain novel features of the construction, arrangement and combination of parts which will be hereinafter more fully described and particularly pointed out in the appended claims, reference being had to the accompanying drawings, forming a part of this specification, in which

Figure 1 is a side elevational view of the wrench embodying the invention,

Figure 2 is a view in transverse vertical section,

Figure 3 is a front elevational view,

Figure 4 is a transverse sectional view on the line 4—4 of Figure 1,

Figure 5 is a sectional view on the line 5—5 of Figure 1, and

Figure 6 is a detail perspective view of the removable plate.

Referring to the drawings wherein, for the sake of illustration, is shown the preferred embodiment of the invention, the numeral 10 designates the body portion of the wrench. An outer jaw 11 is carried by the body portion at one end thereof and a tubular shank 12 is carried by the other end thereof. The body portion is provided with an opening 13 which is alined with the opening of the tubular shank and which is preferably polygonal for a purpose which will hereinafter more fully appear.

An inner jaw 14 is operatively associated with the outer jaw. The inner and outer jaws constitute the coacting jaws of the wrench. The inner jaw 14 is provided with a shank designated generally at 15 and slidably arranged in the opening 13 of the body portion. The shank comprises sections 16 and 17 both of which are of general polygonal cross section whereby the shank is constrained to rectilinear movement through the opening of the body portion. As shown in Figure 2, the section 17 is provided with an axial opening or bore 17^c which extends entirely therethrough. The section 16 is provided with a reduced extension 16^a and the section 17 is provided with a complementary reduced extension 17^a. These reduced extensions are provided with complementary recesses 16^b and 17^b respectively.

A removable plate 18 normally closes an elongated opening 10^a provided in the front face of the body portion, the plate being secured in position by means of screws 19 or the like. When the plate 18 is removed and the jaws of the wrench are closed as shown in Figure 2, the inner jaw 16 may be removed together with the section 16^a of the shank thereof, the opening 13^a being of sufficient extent to permit this operation.

Operating means for the coacting jaws is provided and includes a travelling screw 20 preferably hollow and having its threads operatively engaged with internal threads 21 provided on the inner wall of the tubular shank 12. These internal threads 21 thus constitute a threaded bearing for the travelling screw. A spindle 22 is carried by the travelling screw and is arranged in the opening 17^c of the shank section 17. A head 23 is rotatably arranged in the recess defined by the complementary recesses 16^b and 17^b and is connected to the spindle 22 by means of a neck 24 suitably secured to the head and to the spindle. The spindle, neck and head, together with the complementary recesses of the reduced extensions thus constitute common means for transmitting the linear motion of the screw to the inner jaw